

FINR

United States Department of the Interior
National Park Service

National Register of Historic Places
Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Ceylon Covered Bridge
other names/site number _____ 001-236-50046

2. Location

street & number CR 900 S over Wabash River in Limberlost County Park N/A not for publication
city or town Ceylon vicinity
state Indiana code IN county Adams code 001 zip code 46740

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36CFR Part 60. In my opinion, the property meets does not meet the National Register criteria. I recommend that this property be considered significant nationally statewide locally. (See continuation sheet for additional comments.)
[Signature] 11-1-06
Signature of certifying official/Title _____ Date _____
Indiana Department of Natural Resources
State or Federal agency and bureau _____

In my opinion, the property meets does not meet the National Register criteria. (See continuation sheet for additional comments.)

Signature of certifying official/Title _____ Date _____
State or Federal agency and bureau _____

4. National Park Service Certification

I hereby certify that the property is:
 entered in the National Register. See continuation sheet.
 determined eligible for the National Register See continuation sheet.
 determined not eligible for the National Register
 removed from the National Register
 other, (explain:) _____

Signature of the Keeper _____ Date of Action _____

Ceylon Covered Bridge
Name of Property

Adams IN
County and State

5. Classification

Ownership of Property
(Check as many boxes as apply)

- private
- public-local
- public-State
- public-Federal

Category of Property
(Check only one box)

- building
- district
- site
- structure
- object

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
0	0	buildings
0	0	sites
1	0	structures
0	0	objects
1	0	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

TRANSPORTATION: Road-Related

Current Functions
(Enter categories from instructions)

TRANSPORTATION: Road-Related (vehicular)

7. Description

Architectural Classification
(Enter categories from instructions)

OTHER: Howe Truss Bridge

Materials
(Enter categories from instructions)

foundation STONE: Limestone
walls METAL: Steel
WOOD: Weatherboard
roof
other

Narrative Description

(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- Criteria A, B, C, D with checkboxes and descriptions.

Criteria Considerations

(Mark "x" in all the boxes that apply.)

Property is:

- Criteria A through G with checkboxes and descriptions.

Areas of Significance

(Enter categories from instructions)

ENGINEERING
TRANSPORTATION

Period of Significance

1879

Significant Dates

1879

Significant Person

(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

N/A

Architect/Builder

Smith Bridge Company

Huffman, Martin J.

Narrative Statement of Significance

(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographic References

Bibliography

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- Criteria for previous documentation on file (NPS).

Primary location of additional data:

- Criteria for primary location of additional data.

Name of repository:

Ceylon Covered Bridge
Name of Property

Adams IN
County and State

10. Geographical Data

Acreage of Property less than 1 acre

UTM References (Place additional UTM references on a continuation sheet.)

1	16	674010	4497740	3			
	Zone	Easting	Northing		Zone	Easting	Northing
2				4			

See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title James Cooper, Julie O'Beirne
organization Geneva Proud date 02-23-2006
street & number P.O. Box 2 telephone 260/ 368-7523
city or town Geneva state IN zip code 46740

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

- A **USGS map** (7.5 or 15 minute series) indicating the property's location.
- A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white** photographs of the property.

Additional items

(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name Adams County Commissioners
street & number 313 W. Jefferson St. telephone 260/ 724-5314
city or town Decatur state IN zip code 46733

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects (1024-0018), Washington, DC 20503.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 7 Page 1

Ceylon Covered Bridge, Adams County, Indiana

Section 7: Structural Description and Analysis

The centerpiece of Limberlost County Park, the 130-foot Ceylon Bridge superstructure sits well above the old river channel on cut-stone abutments and wing-walls adjacent to County Route 900S which carries vehicular traffic across the Wabash today. The bridge remains on its original site spanning a now-isolated segment of the old river channel. Unlike the 1860 highway which once skirted a number of the sloughs in the extended river valley, navigated other parts of the wetlands on timber beams, and crossed the Wabash over the predecessor Baker Bridge's low pony-truss spans, the somewhat straightened roadway to the 1879 Ceylon structure filled in some of the original sloughs and approached the river channel on relatively high embankments. The county invested in a permanent, high-capacity structure with the Howe through-truss Ceylon Bridge.

Substructure

The decision for permanence is evident in choices made for both the substructure and the superstructure. The "number one" limestone abutments and wing-walls cost 47% of the whole. According to the specifications, the stone substructure was to rest on "a green oak foundation covered with plank." The six feet of stonework to be "placed below the bed of the river" was "to be laid in cement." Nine courses of 10-inch high stone, variously cut into two, three, and four feet long blocks and all "laid in good lime mortar," rise above the old river level. They are finished with a course of cut-stone coping which extends about six inches beyond the main courses of stone below. The abutments are 20-feet long; the wing-walls four feet longer upstream (16' on the Southeast) than downstream (12' on the Northwest).¹

Superstructure

The particular form of the Ceylon Bridge chords owed more to its fabricator, the Smith Bridge Company of Toledo, Ohio, and its own penchant for standardization and prefabrication than it did to William Howe's patents *per se*. Ceylon's trusses are 14-feet deep (out-to-out).

Its 24-inch wide top and lower chords are composed of four strings of 5-inch wide by 11.75-inch deep timbers.² The system used to maintain spacing and to equalize stress between the

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 7 Page 2

Ceylon Covered Bridge, Adams County, Indiana

strings differed somewhat between the upper and lower chords in accordance with each's particular anticipated functioning in the truss system. The upper chord was expected to address compression; the lower to be in tension. The top chord arrangements are simple, straight-forward, and standardized for prefabrication: 13-inch oblong hardwood keys—seated between the notched string timbers and held snugly in place by threaded rods bolted through all the strings just before and just after the keys—turn the strings into an integrated chord unit. The series of keys are spaced about three feet apart. The lower chord's arrangements are more complex. Here a series of 12-inch oblong keys, spaced only one foot apart (rather than three feet) and bolted together in the intervals as above, provide for more periodic and regular integration of the strings. In a string where one timber ends and a new one begins in top and bottom chords—something that occurs in only one string in a given panel—the connection is treated in the top chord as no more than a part of the regular key sequence. In the bottom chord, however, the abutting timbers are specially spliced together with nearly 6-foot long fishplates that are 4.5-inches wide at keying areas.

Ceylon's truss web follows the Howe pattern as it had generally evolved by 1879 and as the Smith Bridge Company particularly fabricated it. Each Ceylon truss is divided into twelve panels (12 at 10.5' each, plus portals) by a pair of vertical wrought-iron rods that extend through triangular cast-iron bearing-blocks keyed into the chord strings atop the lower chord and under the upper one. Tubular cast-iron sleeves guide the rods between the chord strings and through a plate at the chords' outer edges where the rods are then secured with washers and nuts. To accommodate the transfer of anticipated accumulated stress towards the ends of the span, the most central pairs of rods start at 1-inch in diameter and increment by .125-inches per set per panel until they reach 1.875-inches at span-end.

From his first patent onward, William Howe allowed for iron bearing-blocks "to prevent bruising" of posts and chords. Reference to the use of metal sleeves between chord strings appear later. In his 1846 patent, Howe speaks of "metallic sockets" here as a means "to give to the screw nuts by which the strain is made on the vertical rods, a bearing which is independent of the shrinkage of the woodwork of the string piece."³ Whether the sleeves used on Ceylon were cast as part of the bearing-blocks or are separate tubes remains undetermined. If the latter, the Smith Bridge Company may have relied on John L. Piper's

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 7 Page 3

Ceylon Covered Bridge, Adams County, Indiana

1861 patented improvement for casting the blocks separate from "the tubes" but capable of interlocking with them. Piper's scheme purportedly allowed for easier installation and repair.⁴

The Ceylon timber cross-panel members consist of a pair of diagonals and a single counter-brace. Like the iron-rod verticals, the timber web members vary in size according to anticipated stress loads on them. The diagonals are heavier at span-end than at mid-span, and the counters are the reverse. The outer diagonals start with 9-inch square timbers, decrease in size by a square inch in each of the next four sets towards center, and then retain that smaller size (8" by 6") for the two panels on each side of mid-span. The counters come in only two sizes. They are 6-inch square timbers in the outer three panels and then grow by two square inches (8" by 6") in the three panels on each side of mid-span. Howe's 1840 patents featured multiple-intersecting web members with diagonals and counters crossing two panels. By 1846, however, the inventor had settled on single-panel timber webbing between wrought-iron vertical rods, a pattern sometimes referred to as St. Andrew crosses.⁵

To allow for a 16-foot roadway, Ceylon's two trusses sit 20 feet and 10.5 inches apart (out-to-out, including siding). The trusses are systematically braced above and below with diagonal timber laterals (6" by 6") seated on bearing blocks at the trusses and perpendicular threaded wrought-iron rods which extend through the blocks and the chord strings to the outer chord edge where nuts snug the bracing members together and to the trusses. In each bracing panel, one of the diagonal cross-timbers is joined by a simple notched scarf into the side of the other. Ceylon's floor system consists of five nine-inch high timber floor-beams resting on the lower chord in each truss panel. The beams in turn support a sub-floor of diagonally-placed, three-inch thick plank under a rough cut, wide-plank riding surface (8" by 12"), all spiked to the floor-beams.

For covering, the Ceylon Bridge has a roof carried on rough cut rafters (2" by 4") which overhang the siding by about a foot. The rafters currently support furring strings to which galvanized-steel sheeting is attached. The siding consists of tongue-and-groove boards (1" by 12"). Entrance portals added beyond the trusses also provide some protection for the structure. Besides extending the siding, the portals at their ends enclose the roof area and the vertical exposure of the trusses as well as carry protective siding on the inside. The siding and the portals are currently painted red; the portal entrances and fly-rafters are outlined in white.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 7 Page 4

Ceylon Covered Bridge, Adams County, Indiana

Structural Integrity

A century and a quarter of use has left its mark on the Ceylon Bridge. Although well-worn and repaired, the structure still retains its basic original design and a remarkable amount of its original material.

The superstructure has undergone more change than the substructure. Indeed, the cut-stone abutments and wing-walls appear to remain quite intact, although significant portions of one abutment and its wing-walls have been encased in concrete. The bearings and the lower truss chords have suffered most from neglect and repair. The rotted original bearings have been partly replaced and partly encased in concrete, some of the outer lower laterals are missing, and a few of the adjacent outer pairs of diagonal truss timbers have had their rotted ends removed and new sections spliced in place. The lower chords have been less repaired than shored up with a pair of timber bents. While a couple of the vertical truss rods have been spliced with welding, almost all the original wrought iron appears to be in place. Some holes in the roadway have been repaired, although again a remarkable amount of the original planking remains. The roof covering is modern, not original, in material and style.

A good many of the infelicitous repairs could be reversed as part of a sensitive structural restoration of Ceylon Bridge. Furthermore, the structural tuning that Howe built into his design, none of which has probably been performed on the bridge during the century and a quarter of its existence, could help to return the truss system to its intended functioning.

Endnotes

1. Some of the structural measurements are taken from the six sheets of measured structural drawings which the College of Architecture and Planning of Ball State University drafted for the Historic American Engineering Record. HAER: IN-57. These images are electronically available through the Library of Congress "American Memory" website <<http://memory.loc.gov/cgi-bin/query>>. Other measurements were made from site-visits in 2005 by James L. Cooper and Julie O'Beirne.

2. For the county's specifications as quoted herein, see Adams County, "Commissioners Record," H: 415. Julie O'Beirne and James L. Cooper furnished the other measurements cited.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 7 Page 5

Ceylon Covered Bridge, Adams County, Indiana

3. Some of the structural measurements are taken from the six sheets of measured structural drawings which the College of Architecture and Planning of Ball State University drafted for the Historic American Engineering Record. HAER: IN-57. These images are electronically available through the Library of Congress "American Memory" website <<http://memory.loc.gov/cgi-bin/query>>. Other measurements were made from site-visits in 2005 by James L. Cooper and Julie O'Beirne.

4. William Howe, "Truss Frames for Bridges," U. S. Patent #1,685 (July 1840); William Howe, "Truss-Bridge." U. S. Patent #4,726 (August 1846).

5. John L. Piper, "Improvement in Bearing-Blocks for Bridge-Trusses," U. S. Patent #33,542 (October 1861).

6. Francesca da Porto, "Pine Bluff Bridge," HAER No. IN-103 (National Covered Bridges Recording Project, 2002), 8-10.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 8 Page 6

Ceylon Covered Bridge, Adams County, Indiana

Section 8: Statement of Significance

The Ceylon Covered Bridge meets National Register criteria A and C in the areas of transportation and engineering. Here was one of the two most important crossings of the Wabash River between Portland in Jay County and Geneva in southern Adams County, on the one hand, and Decatur, Fort Wayne, Huntington, and Toledo, Ohio, to the northeast and northwest on the other. Here stands a notable example of mid-nineteenth-century engineering and craftsmanship, the last covered combination timber and iron through-truss bridge to survive in Adams or any contiguous Hoosier county, and among the oldest of three remaining Howe-truss structures designed and erected by the Smith Bridge Company in Indiana.

Natural Physical Setting and Early Development

Two large natural watercourses each traverse Adams County in a northwesterly direction, the Wabash River in the southern quarter and the St. Mary's River in the northern three-quarters. These rivers are parts of different watersheds: Waters from the Wabash ultimately exit the continent through the Gulf of Mexico, while those of the St. Mary's leave through the Gulf of St. Lawrence. The Wabash, the river of primary interest here, wound and wove especially crookedly and sluggishly across the county. Although in decline as routes of transportation by the time of the U.S. Civil War, both rivers still helped to move some goods across the county and region.¹

Among the important early roadways in Adams County, at least a pair associated with the Wabash River evolved in part from Native American and French explorer, trader, and missionary trails (see appended map). When still a territory, the northeastern part of Indiana was organized into a large local-government unit known as Wayne with its center in Winchester. To transport mail and to facilitate other forms of communication between Fort Wayne in the north and the local-government seat to the south, the territorial/state authorities cut a trace known as the Winchester road. As the Winchester road entered what is now Adams County from the south, it improved parts of an earlier trail from Fort Recovery, Ohio, to Limberlost Creek at "old Buffalo" (later part of Geneva), and then northwards to Peter Studebaker's farm (section 17, Wabash Township). While the trail then turned northeastwards along the south bank of the Wabash River towards Bluffton, the Winchester road crossed the river at Studebaker's and ran directly northward to Decatur and Fort Wayne.²

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 8 Page 7

Ceylon Covered Bridge, Adams County, Indiana

A second trail which led to the crossing of the Wabash River in southern Adams County is directly relevant to the Ceylon Bridge. The Godfrey trace followed the trail discussed above from Jay County to Limberlost Creek at Buffalo, where the Godfrey separated from it, headed northeastwards along the high ground north of the creek, and then forded the Wabash River at Carrington's (northwest corner of Section 22, Wabash Township) to head on northward to provide access to Berne, Monroe, Decatur, Salem, and Pleasant Mills. This trail also became a public highway known as Prairie road.³

Trails, traces, and early roadways had to contend in southern Adams County with large stretches of natural wetlands known as the Loblolly and the Limberlost. During the period of Wabash and southern Hartford Townships' settlement, beaver dams abounded, turning segments of sloughs into shallow ponds and enlarging a number of small lakes. Thickly inhabited by fur-bearing animals, the oval pond southwest of Geneva took the shape of the Loblolly swamp pine's leaf, and provided a name for the pond and the surrounding area as well.

The Limberlost Creek, a tributary of the Wabash River, meanders just to the east of the Loblolly. Through vivid and detailed descriptions of the Limberlost region in her early twentieth-century novels, Mrs. Gene Stratton-Porter, "the Bird Woman" of Geneva, brought alive the natural "Cathedral" of plants and animals found in the swamps and forests between the creek and the Wabash River.⁴

Mrs. Stratton-Porter saw the Limberlost in process of dramatic change and, through the character of Bird Woman, forecast its demise as a natural paradise. Hired out of Chicago as a timber guard by the agent of a Scottish ship-builder, Stratton-Porter's "Freckles" soon realized that his employers represented an important step towards the destruction of the natural Limberlost:

"Oh what a shame," cried the [Bird Woman's] Angel. "They'll clear out roads, cut down the beautiful trees and tear up everything. They'll drive away the birds and spoil the Cathedral. When they have done their worst, then all these mills about here will follow in and take out the cheap timber. Then the landowners will dig a few ditches, build some fires, and in two summers more the Limberlost will be in corn and potatoes."⁵

Despite modern "progress" on the ground, hundreds to thousands of readers across the American landscape nevertheless carried the idealized nineteenth-century Limberlost in their imaginations.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 8 Page 8

Ceylon Covered Bridge, Adams County, Indiana

The Baker Bridge, 1860-1879

The Adams County Commissioners and township trustees did not build "permanent" roadway bridges before the late 1860s. Their general practice was, where practicable, to construct timber-beam spans atop timber bents. Where the stream was especially wide and deep, the current swift, or the streambed difficult to anchor into, the authorities might try to limit the number of timber bents needed for a given structure by crossing at least the center parts of the stream with longer timber and combination pony-truss spans.

When taken together, several factors rendered timber beam and pony-truss spans as decidedly impermanent. The fairly rapid decay of untreated timber, the placement of bridge superstructures only modestly above the normal stream level— placing them at risk from flood waters and floating debris— and the frequent undercutting of timber piles reduced the life-cycle of these bridges to an average of from ten to twenty years. On the other side of the local balance sheet, such bridges were simple to design and relatively inexpensive to build and replace. Their construction made especially good sense to local authorities where timber and carpenters were plentiful and sparse population provided a quite limited tax base.

P. N. Collins, the Wabash Township Trustee in 1859, petitioned the county commissioners for help to build a bridge across the Wabash "at or near Cornelius Baker."⁶ Families of the Baker clan had a "settlement" in Section 15 just north of the Carrington ford on the old Godfrey trace.⁷ The Board of Commissioners agreed to Collins' request in March 1860 and appointed Dr. B. B. Snow, who lived across the river from the Bakers, to estimate the cost of construction. In June, Collins rather than Snow presented the board with a proposal for a river bridge and three others on the levee north of the river, all for the grand sum of \$725. The careful commissioners appropriated \$700 and named Dr. Snow as superintendent of construction. Snow was ordered to draft plans and specifications for the bridge, to give a six-weeks notice for letting, and to receive sealed proposals. He was "not [to] let such work to irresponsible persons," and the builder needed to be bonded. Construction must have been complete by December, when commissioner Josiah Crawford examined the new bridges, and Snow received payment of \$25 for his service as superintendent.⁸

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 8 Page 9

Ceylon Covered Bridge, Adams County, Indiana

The commissioners reported something more about the design of the Baker Bridge three years later. Having decided to construct a bridge over the Wabash on the old Winchester road at Studebaker's, the board ordered that the Studebaker structure "shall be weather-boarded the same as the bridge known as the Baker Bridge."⁹ The language here tells us that the Baker Bridge was not a timber through-truss one, since it was not "covered." It consisted, however—at least in part—of timber pony-trusses whose sides could be protected from decay by weather-boarding.¹⁰

The Baker Bridge and its satellites on the levee required periodic repair. In 1870, the four structures were replanked and a fifth added "over a bayou" in the Limberlost near Snow's. A year later, the original four bridges underwent additional significant repairs. The cost of the 1870 replanking and the 1871 repairs amounted to about 60% of the cost of original construction undertaken just a decade earlier.¹¹

Early "Permanent" Roadway Bridges

Adams County's general growth and development following the Civil War both increased local transportation needs and the tax base. The progress consequently encouraged governmental leaders to expand their bridge design and construction strategies from simple timber beam and pony-truss spans supported on timber bents that required regular repair and relatively frequent replacement to more permanent and expensive structures by the late 1860s. When Peter Hoffman petitioned the commissioners in March 1868 for \$4,000 to replace the timber beam and pony-truss bridge over the Wabash at Buena Vista (now Linn Grove) in Hartford Township, the township trustee signaled that his request was for a qualitatively different kind of structure than had typically been built in Adams County.¹² The board confirmed this shift when it, in turn, agreed "to construct a covered bridge...with two stone abutments and [to] cross the river with one span"—the first time in Adams County.¹³ Instead of leaving the design and contracting to the township trustee, the board took full charge of the letting. In July, the commissioners voted to build "on the Smith Plan or Patent truss bridge which is to be constructed of good pine timber lumber and shingles, with a single span of 165 feet in length with two coats of ["dark brown"] paint, and the siding to be dressed lumber." The abutments were to be built of good stone masonry. Two of the commissioners

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section number 8 Page 10

Ceylon Covered Bridge, Adams County, Indiana

traveled to Miami County, Ohio, "to examine some bridges built on the same plan and, if found built in a good substantial manner, to receive sealed proposals for the construction of said bridge."¹⁴ The commissioners were duly impressed with the Smith trusses they saw in Ohio, and Wheelock, McKay and Underhill of Fort Wayne subsequently secured a \$5,873 contract to erect the Buena Vista covered bridge.¹⁵

The Smith Bridge Company of Toledo, Ohio, was a major national builder of timber-truss bridges. Robert W. Smith, its leader, both invented truss forms that he patented and systematized pre-fabrication and sales into high arts.¹⁶ Virtually in Smith's backyard, Adams County profited at Buena Vista from one of the patented all-timber (except for bolts) designs erected under the capable direction of one of Smith's leading agents, Wheelock, McKay and Underhill of Fort Wayne.

As the years passed, official opinion in Adams County continued shifting away from beam and pony-truss structures for long bridges, first towards through-trusses in timber,¹⁷ and then to combination timber and iron ones. Indeed, the commissioners were considering going even further—to all-iron trusses—as early as 1876. The editor of the *Decatur Democrat* reported that the board had "been inspecting iron bridges in surrounding counties with a view to putting up more permanent bridges hereafter in this county, believing it to be better for the county in the long run."¹⁸

The drift towards iron settled for a while in a preference for the combination iron and timber Howe through-truss. When, in July 1877, the commissioners contracted with Smith Bridge for the superstructure of the Monroe Street (Decatur) Bridge, they selected the company's "Howe Truss No. 2 Plan of Bridge" for the design.¹⁹ In September, at the suggestion of the Preble Township Trustee, the board specified that it wanted "a Howe Truss covered bridge" at Scheiman's. In this case, the county ultimately contracted with Smith's sometime-agent in Fort Wayne, Alpheus Wheelock and associates now operating at the Western Bridge Works, for the fabrication and erection of Scheiman's superstructure.²⁰

Howe Truss Pattern

The county authorities could have continued to select a serviceable all-timber, through-truss superstructure for less money than the combination timber and iron one on which the commissioners had come to prefer. The Howe truss pattern that the board favored

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 8 Page 11

Ceylon Covered Bridge, Adams County, Indiana

represented a significant gateway—a culminating break-through—on the way to the era of iron bridges.²¹ In the judgment of J. G. James, “the Howe truss...was the crowning glory of the wooden bridge era, generally accepted as the best ever, and the subject of perhaps the most profitable bridge patent ever granted.” “...Only the all-iron truss forms halted its total dominance.”²²

William Howe’s patents addressed a major problem with timber trusses: continuing rigidity.²³ As a system of interconnected rigid triangles, trusses by definition need to keep their members in tight contact with one another. As timber dries, it tends to shrink; as wood works under stress, it may deform or creep; as it is subjected to moisture, timber rots away, especially at the ends of members. By adding an arch to their designs, carpenter-fabricators like Theodore Burr supplemented or over-designed their trussing to account for contingencies, some of which came with time. Howe, on the other hand, addressed the problem more directly and basically solved it. He substituted threaded wrought-iron vertical rods for the more usual timber posts.

Howe’s wrought-iron vertical rods could be tightened to achieve general rigidity by pulling the members of the truss web snugly against each other and to the chords through bearing-blocks, and they could be re-tightened over time as timber members aged. In each of his patents, Howe focused on “improvements” to facilitate the achievement and maintenance of camber, *i.e.*, the creation of a slight upward arc towards mid-span in the bridge’s trusses usually by shortening slightly the panel lengths of the lower chord and lengthening the diagonals a little to compensate. Proper camber should prevent a trussed bridge superstructure from bending below a horizontal line when fully loaded.²⁴ By simplifying truss tuning to the tightening and loosening of nuts on metal rods, Howe’s system also facilitated prefabrication and reduced the need for a lot of skilled carpentry at erection.

Ceylon and its Through-truss Bridge, 1879-1908

The prognosis for the Limberlost which Gene Stratton-Porter’s Angel reported in print in the early twentieth-century was less forecast than a description of what had largely become the contemporary reality. The Bird Woman did not live in Alexander or Buffalo but in the bustling town of Geneva, which had grown around and absorbed these earlier hamlets. “When [in 1873] timber in the adjacent country was still plentiful,” Dr. B. B. Snow platted the small

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 8 Page 12

Ceylon Covered Bridge, Adams County, Indiana

industrial town of Ceylon to the north (sections 20 and 21). At the height of its prosperity, Ceylon contained "spoke, wheel, heading and stave factories, saw and grist mills, cooper shops, and a number of well-stocked stores."²⁵ Snow operated the first steam grist mill in the southern part of the county as well as a saw mill with a capacity for 50,000 feet of lumber a week. This mill alone furnished over ten miles of railroad bridge timber along with thousands of railroad ties and other timbers.²⁶

At the instigation of Wabash Township Trustee Lafayette Rape, the commissioners went in June 1879 to inspect Baker Bridge over the Wabash northeast of the thriving town of Ceylon. Two days after the inspection, Rape petitioned the commissioners for the construction of a new bridge at the old Baker Bridge site, and the board promptly agreed to a late July letting. The board specified abutments "of good number one limestone" for "a Howe or Smith Truss Wooden Bridge, 130 feet long, with a roadway of 16 feet in clear, posts 17 feet, and covered, and to be well painted with three coats of mineral paint and linseed oil."²⁷

The Smith Bridge Company presented the commissioners with "the best and lowest bid" for a Howe-truss superstructure at \$1,722.50. M.. J. Huffman received the county's nod for the stone masonry abutments at \$1,525.40. Commissioner Benjamin Runyan was appointed as the board's special agent to oversee construction. Huffman received his contracted payment for the masonry in October, and Smith Bridge got its due for the completed superstructure in March 1880.²⁸

Before the Ceylon masonry contract, Martin J. Huffman (*aka* Hoffman) had worked in partnership with Daniel Railing of Root Township and often in association with the Meyers Brothers (Daniel W. and David L.) of Decatur on the construction of cut-stone abutments for at least four other bridges in Adams County in the mid-to-late 1870s.²⁹

Robert W. Smith and his company tried to stay on the cutting edge of bridge superstructure design and construction. Smith had at least three versions of his all-timber, patented trusses for sale, and his company usually built them relatively inexpensively. But, Smith also adjusted over the years to the coming of wrought iron, first through combination patterns as in the Howe truss and, after 1870, in the fabrication and erection of all-metal trusses as well.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 8 Page 13

Ceylon Covered Bridge, Adams County, Indiana

Ceylon Bridge, 1909-present

Following the exploitation of the timber which was speeded up in part with the growth of Geneva and the development of Ceylon in the 1870s, the Bird Woman's Angel correctly recognized that "then the landowners will dig a few ditches, build some fires, and in two summers more the Limberlost will be in corn and potatoes."³⁰ Ditching had begun in earnest to drain the wetlands and extend agricultural production in the 1880s.

At the turn of the century, plans were afoot to channelize a key stretch of the Wabash River itself. Snow reported in his 1907 *History* that the river "is at this time being dredged and straightened through what was formerly the farm of Dr. B. B. Snow. The dredging begins at the mouth of the Limberlost Creek and extends to the Price Bridge, where the river crosses the Winchester Road."³¹ The dredging of the Wabash bypassed the Ceylon Bridge, leaving it on the still partly watered old river channel while requiring the construction of a supplementary structure, a metal-truss bridge, over the new channel.³²

In 1973, Adams County authorities realigned County Route 900S to the southward, building in the process a high earthen approach that closed off the old river channel and bypassed both the Ceylon Bridge and the metal-truss structure (old county bridge #152). The commissioners contracted for a new three-span continuous prestressed concrete I-beam structure over the main river channel and had the adjacent early-twentieth-century metal trusses removed. The county left the old Ceylon Bridge in place for pedestrian use and turned 41 acres around it into the Limberlost Park.

Conclusion

Once there were dozens of timber-truss structures spanning the Wabash River, one of Indiana's most important waterways. Now the Ceylon Bridge is the only extant covered structure of any form still standing over an original channel of the Wabash or in Adams and contiguous Hoosier counties. First trod as a native American trail and explorer trace, the roadway and its river crossing is one of the most long-standing and important ones in southern Adams County. The bridge over the old channel of the Wabash rises here on cut limestone abutments erected by local masons under the experienced hand of Martin J. Huffman. A major national designer and industrial fabricator of timber, combination, and metal bridges, the Smith Bridge Company of Toledo, Ohio, fabricated and erected the trussed

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 8 Page 14

Ceylon Covered Bridge, Adams County, Indiana

superstructure. The trusses follow the classic Howe pattern combining timber with wrought and cast-iron members and elements. With its structural integrity largely intact, the Ceylon Covered Bridge meets National Register criteria A and C in the areas of transportation and engineering.

The significance of the Ceylon Covered Bridge has long been recognized by professional preservationists. It was, for example, selected for inclusion in the Historic American Building Survey.³³ The College of Architecture and Planning of Ball State University has also documented the structure for the Historic American Engineering Record with six sheets of measured drawings.³⁴ The state of Indiana acknowledges the structure's importance in another way--by making an annual contribution, now at \$1,250, towards its maintenance.

Endnotes

1. J. F. Snow, *Snow's History of Adams County, Indiana* (B. F. Bowen, Indianapolis, 1907), 32-33; John W. Tyndall & O. E. Lesh, *Standard History of Adams and Wells Counties, Indiana* (Lewis Publishing, Chicago and New York, 1918), 11-12.
2. Snow, *History*, 35-38.
3. Alan S. Baumgartner, ed., *Geneva and Area Centennial, 1872-1972*, 25, 27.
4. Tyndall & Lesh, *Standard History*, 15-21, 239-241.
5. From Mrs. Gene Stratton-Porter, *Freckles*, as quoted in Tyndall & Lesh, *Standard History*, 18.
6. Adams County, "Commissioners Record," C: 407.
7. Baumgartner, *Geneva Centennial*, 25; Wabash Township in "Adams County Tax Records" (Adams County Archives, Decatur), 1850, 1855, 1860, 1865.
8. Adams County, "Commissioners Record," C: 420-421, 451.
9. Adams County, "Commissioners Record," D: 134.

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section number 8 Page 15

Ceylon Covered Bridge, Adams County, Indiana

10. The "1860" currently painted on the portals of the Ceylon Bridge and also most often assigned as the date of construction in published secondary sources may represent confusion of the Baker pony-truss structure with Ceylon's through-trusses. The documentary source for the Indiana Historical Bureau's construction date of 1862 is not cited in the Bureau's 1998 publication, "Covered Bridges in Indiana," *Indiana History Bulletin*, 69, #1. George Gould, still the dean of Hoosier covered bridge study, owned that he had tried to determine the construction date of the Ceylon Bridge from the commissioners records, but did not have adequate time in the county courthouse to make a thorough enough search to establish it. George Gould, "Adams County Revisited," *Indiana Covered Bridge Society Newsletter*, July 1975: 1-2.
11. Adams County, "Commissioners Record," E: 341, 425, 512. In 1879, the board added another small bridge over a Limberlost "bayou" near the 1870 "Snow Bridge." *Ibid.*, H: 433-434.
12. For the earlier structure at Buena Vista, see Adams County, "Commissioners Record," C: 237, 415, 422, 447; D: 134.
13. Adams County, "Commissioners Record," E: 115.
14. Adams County, "Commissioners Record," E: 121.
15. Adams County, "Commissioners Record," E: 134-137, 180, 247.
16. "The Smith Bridge Company" and "Robert W. Smith," Clark Waggoner, ed., *History of Toledo and Lucas County* (Munsell & Company, New York, 1888), 786-787; Matthew Reckard, P.E., "Smith Trusses: Bringing Covered Bridges into the Industrial Age" (paper presented at "Covered Bridge Preservation: National Best Practices," conference at University of Vermont, Burlington, 2004); "Robert W. Smith," George Gould, *Indiana Covered Bridges thru the Years* (Indiana Covered Bridge Society, Indianapolis, 1977), 17-18.
17. In 1876, the county ordered the construction of a pair of covered timber-truss bridges— the Burk/Geneva Bridge (later version of the Juday/Barr Bridge) and the Price Bridge (later version of the Studabaker Bridge) over the Wabash.
18. *Decatur Daily Democrat*, 27 July 1876: p3 c2.
19. Adams County, "Commissioners Record," G: 566.
20. Adams County, "Commissioners Record," H: 26, 46.

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section number 8 Page 16

Ceylon Covered Bridge, Adams County, Indiana

21. J. G. James, "The Evolution of Wooden Bridge Trusses to 1850," *Journal of the Institute of Wood Science* (London, U.K.), June and December 1982: 116-135, 168-193; Francesca da Porto, "Pine Bluff Bridge," HAER No. IN-103 (National Covered Bridges Recording Project, 2002); Francis E. Griggs, Jr., "It's a Pratt! It's a Howe! It's a Long! No, It's a Whipple Truss," *Civil Engineering Practice*, Spring/summer 1995: 73-75; Jeff Shroyer, "Howe Trusses in Indiana," *Indiana Covered Bridge Society Newsletter*, October 1980: 1-3.
22. James, "Wooden Bridge Trusses," 178.
23. William C. Howe, "Truss-Frame for Bridges," U. S. Patent #1,685 (July 1840); "Manner of Constructing the Truss-Frames of Bridges and Other Structures," U. S. Patent #1,711 (August 1840); "Truss-Bridge," U. S. Patent #4,726 (August 1846).
24. John C. Trautwine, *The Civil Engineer's Pocket-Book* (Philadelphia, 20th edition, 1919), 696. 726.
25. Tyndall & Lesh, *Standard History*, 259.
26. Tyndall & Lesh, *Standard History*, 237-239; Snow, *History*, 92-95, 184.
27. Adams County, "Commissioners Record," H: 409, 415.
28. Adams County, "Commissioners Record," H: 426, 479, 524.
29. Abutments for Burk, Limberlost, Studabaker, and Monroe Street (Decatur) Bridges were constructed in 1876-1877. Adams County, "Commissioners Record," G: 338, 340-342, 399, 567-568; H: 59-60.
30. From Mrs. Gene Stratton-Porter, *Freckles*, as quoted in Tyndall & Lesh, *Standard History*, 18.
31. Snow, *History*, 33-35.
32. Jerry L Setser reported the "steel bridge" over the main channel of the Wabash as 109-feet long and 18-feet wide in his "Plan and Survey of Limberlost Park" (February 1973).
33. "Ceylon Covered Bridge," IN-156, Thomas M.. Slade, ed., *Historic American Buildings Survey in Indiana* (Indiana University Press, Bloomington, 1983), 34-45.
34. HAER: IN-57. These images are electronically available through the Library of Congress "American Memory" website <<http://memory.loc.gov/cgi-bin/query>>.

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section number 9 Page 17

Ceylon Covered Bridge, Adams County, Indiana

Bibliography

Baumgartner, Alan S., ed., *Geneva and Area Centennial, 1872-1972*. N.P.: Privately Printed, 1972.

da Porta, Francesca. U.S. Department of the Interior, Historic American Engineering Record (HAER), No. IN-103. "Pine Bluff Bridge," National Covered Bridges Recording Project, 2002. Library of Congress, Washington, D.C.

Gould, George. "Adams County Revisited," *Indiana Covered Bridge Society Newsletter*. July 1975.

_____. "Robert W. Smith." *Indiana Covered Bridges thru the Years*; Indiana Covered Bridge Society, Indianapolis, 1977.

Griggs, Francies E. Jr. U.S. Department of the Interior, Historic American Engineering Record (HAER), No. IN-103. "Pine Bluff Bridge." National Covered Bridges Recording Project, 2002.

Howe, William C. "Truss-Frame for Bridges." U. S. Patent #1,685 (July 1840.)

_____. "Manner of Constructing the Truss-Frames of Bridges and Other Structures." U. S. Patent #1,711 (August 1840.)

_____. "Truss-Bridge." U. S. Patent #4,726 (August 1846.)

James, J. G. "The Evolution of Wooden Bridge Trusses to 1850." *Journal of the Institute of Wood Science*. London, U.K. June and December 1982.

McConahy, Charles A. *Map of Adams County Indiana*. Wabash Township, Adams County, Indiana. Worley & Bacher, Philadelphia, 1874.

Piper, John L. "Improvement in Bearing-Blocks for Bridge-Trusses." U. S. Patent #33,542 (October 1861.)

Reckard, Matthew, P.E., "Smith Trusses: Bringing Covered Bridges into the Industrial Age." University of Vermont, Burlington, 2004.

Setser, Jerry L. "Plat and Survey of Limberlost Park." February 1973.

Shroyer, Jeff. "It's a Pratt! It's a Howe! It's a Long! No, It's a Whipple Truss," *Civil Engineering Practice*. Spring/summer 1995.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 9 Page 18

Ceylon Covered Bridge, Adams County, Indiana

Slade, Thomas M. "Ceylon Covered Bridge" IN-156, ed. *Historic American Buildings Survey in Indiana*. Indiana University Press, Bloomington, 1983.

Snow, J. F. *Snow's History of Adams County, Indiana*. B. F. Bowen, Indianapolis, 1907.

Trautwine, John C. *The Civil Engineer's Pocket-Book*. Philadelphia, 20th edition, 1919.

Tyndall, John W. & O. E. Lesh. *Standard History of Adams and Wells Counties, Indiana*. Lewis Publishing, Chicago and New York, 1918.

Waggoner, Clark. "The Smith Bridge Company" and "Robert W. Smith," ed., *History of Toledo and Lucas County*. Munsell & Company, New York, 1888.

Adams County, Indiana. Tax Records. Adams County Archives, Decatur, Indiana.

Adams County, Indiana, Commissioners' Record, Adams County Archives, Decatur, Indiana.

Decatur Daily Democrat. 27 July 1876: p3 c2.

U.S. Department of the Interior, Historic American Engineering Record (HAER), No. IN-57. "Ceylon Covered Bridge," American Memory website. <http://memory.loc.gov/cgi-bin/query>. Library of Congress. Washington, D.C.

"Howe Trusses in Indiana," *Indiana Covered Bridge Society Newsletter*, October 1980.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section number 10 & 11 Page 19

Ceylon Covered Bridge, Adams County, Indiana

Verbal Boundary Description

In a plan, a rectangle measuring 200'x80' centered on center of the span and the centerline of the bridges roadway. The rectangle's long sides parallel the bridge chords and the short ends parallel the portals.

Boundary Justification

The rectangular boundary includes the bridge, abutments, and its approaches with approximately 25' of buffer off both ends and sides.

Photographs

Photos By Julie O'Beirne
August 30, 2005

Negatives Archived, Adams County, Indiana, Geneva Public Library, Geneva, Indiana

1. View of bridge looking northeast.
2. View of bridge looking northeast with horse drawn wagon.
3. View of bridge looking northwest.
4. View of north elevation of bridge looking south.
5. View of east portal looking west.
6. View of north chord looking east, center span (left) and 6 panels.
7. View of north chord looking west, center span (right) and 6 panels.
8. View of upper lateral bracing looking west.
9. View of lower lateral bracing and east abutment looking east.
10. View of lower chord fishplate on north lower chord looking east.
11. View of upper chord timber splice on south upper chord.
12. View of west abutment wing wall looking south.
13. View of upper lateral bracing center.
14. View of upper chord looking at center span cast-iron block and wrought-iron rods and roof lateral bracing cast-iron block and wrought-iron rod and timber diagonals.
15. View looking south at western abutment, lower-chord lateral bracing at cast-iron block: wrought-iron rod and timber diagonal.
16. View of cast-iron sleeve below cast-iron block and wrought-iron rod on lower chord.
17. View of wood plank flooring looking west.

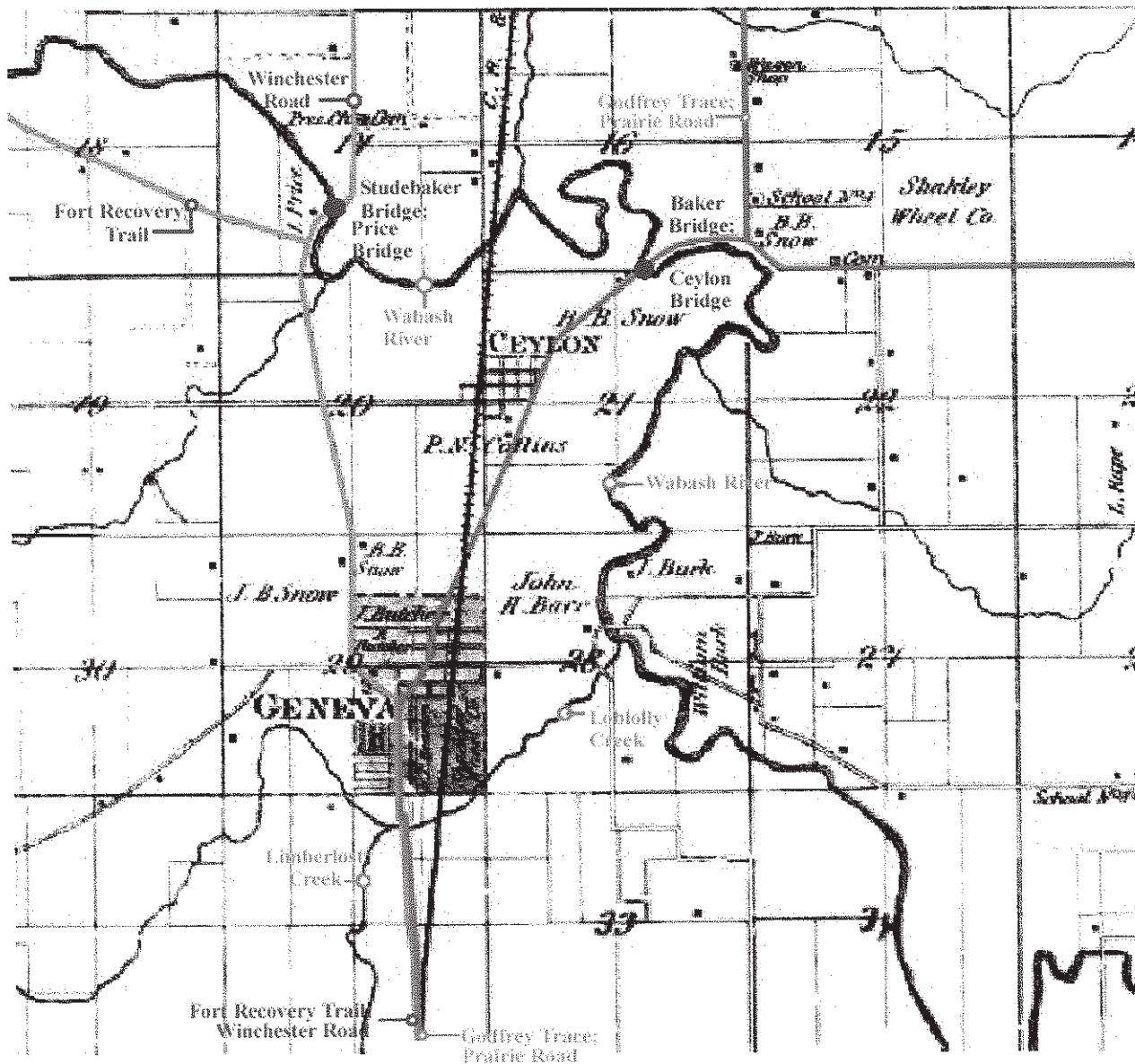
United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Section number 10 & 11 Page 20

Ceylon Covered Bridge, Adams County, Indiana

Wabash Township, Adams County, Indiana*



*abridged and amended from Charles A. McConahy, publ., *Map of Adams County Indiana* (Worley & Bacher, Philadelphia, 1874).

3965 II NE
(LINN GROVE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DECATUR 15 MI.
BERNE 2.3 MI.

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
INDIANAPOLIS

4065 III
(BERNARD)

40°37'30" W
85°00' E

R. 13 E. R. 14 E. 57°00'00" E

449800m N

CEYLON
COVERED
BRIDGE
ADAMS Co.,
INDIANA
1/6
67401D
4497710 4497

1 Mi.
1/4 Mi.

